Notice of Pot Claim No. 3
East Tie-In Criteria

Contract No. 04-0120R4
Correspondance Log
Volume 1 of 2

Item No.	Date	Correspondance			Description
		State Letter	IAI/CC Myers	Other	
1	**12/31/03**	Deputy Division Chief			CC Myers/IAI team determined to be responsible bidders (Deputy Division Chief)
2	**01/16/04**			**Submittal**	Preliminary Design Submittal of ETI (design information package)
3	**03/01/04**			**Meeting minutes**	Tom Ostrom express concern on use of existing as part of design
4	**03/11/04**	**State Letter 3**			Preliminary Design Submittal of ETI is incomplete and not accepted-criteria for stabilizing and monitoring the existing truss
5	**03/16/04**			**Meeting minutes**	Caltrans wants the contractor to verify the soundness of the existing structure-CT wants to work w/ Contractor to comeup w/ a Criteria
6	**03/26/04**			**Meeting minutes**	Tom would like to start developing the criteria
7	**04/02/04**			Meeting minutes	Dan Adams stated that it is important for Pier E-1 to not receive any additional loads than it see in its existing condition.
8	**04/09/04**			Meeting minutes	Dan Adams stated to use cracked section, assume E-1 is elastic and use corresponding displacement to obtain gap.
9	**04/16/04**			**Meeting minutes**	Rocking analysis was presented
10	**04/23/04**			**Meeting minutes**	Majid states that criteria does not boundry condition of Pier E-1 as either ductile or seismically isolated component
11	**04/27/04**			**Meeting minutes**	Connection of Pier E-1 to East Tie-In
12	**04/30/04**			**Meeting minutes**	Roy handed out Draft Criteria
13	**05/04/04**			**Meeting minutes**	Preliminary Draft Criteria was discussed
14	**05/07/04**			**Meeting minutes**	Tom wants to see a new submittal of ETI before considering modifications to the criteria
15	**05/27/04**			**Submittal**	ETI Design resubmittal
16	**06/04/04**	**State Letter 00023**			ETI preliminary design is incomplete- need additional info including a new criteria
17	**06/09/04**			**Meeting minutes**	Staging of ETI is discussed- Tom wants to see preliminary design criteria as a road map to how ETI is designed and constructed
18	**06/21/04**		**IAI RFI 14**		Conceptual agreement on ETI was reached with Caltrans
19	**06/21/04**		FAX from DCCI		Urgent message from J.Ronning stating that he wants to have is input on the criteria before submission to CT
20	**06/21/04**			**Submittal**	ETI Supplemental Preliminary Design submittal
21	**06/23/04**			**Submittal**	Design Criteria

Contract No. 04-0120R4
Correspondance Log
Volume 2 of 2

Item No.	Date	Correspondance			Description
		State Letter	IAI/CC Myers	Other	
25	06/28/04	State Letter 37			Preliminary ETI design accepted- However Final design won't be until the design criteria is mutually agreed upon
26	08/12/04		215-STL.00026		ETI Misc. Materials- Associated costs with delay will be IAI responsibility
27	08/12/04	State Letter 70			Preliminary review comments for Sub/foundations of ETI.
28	08/18/04	State Letter 80			Preliminary review comments for Superstructure of ETI and Criteria
29	08/31/04			Meeting minutes	ETI Criteria is discussed
30	09/01/04			Meeting minutes	Bob states developing of ETI criteria is extra.....Dan states if criteria changes it would have a dramatic effect on IAI's design
31	09/02/04			Meeting minutes	Caltrans comments on ETI Design Criteria
32	09/03/04	SL 05.03.01-000106			Temporary Suspension of Construction
33	09/07/04			Meeting minutes	John Walters suggests to capacity protect the structure and worry about contract administration later- Criteria was discussed
34	09/13/04		215-STL.00030		Request for a CCO to cover costs of development of the ETI Criteria
35	09/30/04	SL 05.03.01-000137			State stating the ETI Design criteria cost is on the contractor
36	10/05/04			Meeting minutes	Design Criteria is not consistent with IAI's design
37	10/07/04		215-STL.00044		Response to State Letter 137
38	10/07/04		CEM-6201A		NOPC (part A)
39	10/13/04	SL 05.03.01-000156			Additional Info is needed prior to establishing Merit-
40	10/15/04			Meeting minutes	Go over the load transfer operations
41	10/22/04		215-STL.00048		NOPC (part B)
42	10/29/04			Submittal	Final Foundation Submittal for ETI
43	11/03/04	SL 05.03.01-000190			No Merit to NOPC
44	11/05/04	SL 05.03.01-000195			ETI Final Foundation submittal is incomplete
45	11/12/04			Submittal	ETI Final Substructure Design Submittal/Final Design Information Package
46	11/22/04		215-STL.00081		TBS action items
47	11/29/04			Submittal	ETI Design Criteria
48	11/30/04			Submittal	Informational package-Design and check Calcs for ETI superstructure
49	12/01/04		215-STL.00058		Myers stating that they believe providing criteria is extra but in the interest of job will submit as requested.
50	12/09/04	SL 05.03.01-000237			Acknowledges receipt of Nov. criteria and states that once this document is approved, review of foundation plans shall resume
51	12/23/04		215-STL.00072		Myers would like to meet w/ Seismic Review Board
52	01/03/05	SL 05.03.01-000263			ETI Design Criteria (Provide Comments to Nov 22 criteria)
53	01/10/05	SL 05.03.01-000272			Design Criteria is CT responsibility; Denies Myers request to meet with Seismic Review Board
54	01/11/05		215-STL.00076		Pier E-1 Behavior and Dynamic Characteristics
55	01/12/05		215-STL.00077		Myers request Caltrans to start reviewing ETI Foundation submittal
56	01/24/05	SL 05.03.01-000287			ETI Design Criteria (Acknowledge reciept of Nov 22 criteria but states that it cannot accept at this time)
57	01/24/05	SL 05.03.01-000288			ETI foundation submittal will not be reviewed until criteria is resolved.
58	02/15/05	SL 05.03.01-000312			Pier E-1 Analysis
59	02/23/05		IAI Letter #51		ETI Design Criteria
60	03/24/05			Meeting minutes	Pier E-1 Behavior
61	03/24/05	SL 05.03.01-000330			State Letter including comments on the Criteria dated Feb 22, 2005.
62	03/28/05	SL 05.03.01-000352			Supplemental clarification to the criteria (to State Letter 330)
63	04/05/05		IAI Letter #70		Clarification to the ETI Design Criteria
64	04/08/05			Meeting minutes	Discussion on ETI
65	04/18/05	SL 05 03 01-000379			Clarification response to IAI Letter 70
66	04/28/05		IAI Letter #85		Cantilever participation assumption
67	04/29/05	SL 05 03 01-000394			Fatigue requirement Clarification
68	05/06/05		IAI Letter #89		ETI Design Criteria
69	05/17/05	SL 05 03 01-000415			Caltrans has no more comments on the ETI Design Criteria
70	05/20/05		IAI Letter #95		Calrification requested regarding non compact sections

Notice of Potential Claim No. 3

East Tie-In Design Criteria

Contract 04-0120R4

I. FACTUAL BACKGROUND:

a) The Design Job at Issue: Temporary Bypass Structure (TBS)

Imbsen & Associates, Inc. ("IAI") entered into a Design-Build Agreement with C. C. Myers ("CCM") on December 1, 2003 with CCM as Design-Builder and IAI as Architect Engineer to provide for the design of the Temporary Bypass Structure ("TBS"). The TBS is a proposed new, temporary structure related to the Bay Bridge to be constructed in the City and County of San Francisco from the Yerba Buena Tunnel ("YBI") to 0.6 km East of Yerba Buena Tunnel. CCM is the prime contractor to Caltrans for the design-build of the TBS. IAI is a subcontractor to CCM pursuant to the Design-Build Agreement. Under the Design-Build Agreement, IAI is required to prepare design documents in accordance with the Contract Plans, Specifications, and Special Provisions. IAI's scope of work includes preparation of the Preliminary Design Submittal, Final Design Submittal, and Construction Submittal as defined under the Contract Special Provisions.[1]

The TBS is shown schematically on the Contract Plans along with the Design Criteria required by the Contract. The TBS, as shown on the plans, consists of three distinct bridge structure segments:

- West Tie-In – This structure is to be constructed as the transition structure to the YBI tunnel with multiple lane closures and staged construction, and requiring removal of portions of the existing Route 80 concrete viaduct (Bridge No. 34-0004).

- Viaduct – This Double deck steel structure connects the West Tie-In and East Tie-In.

- East Tie-In (ETI) – The design concept envisioned construction to include erection of the East Tie-In adjacent to the existing Route 80 steel truss (Bridge No. 33-0025) span YB4, between Pier YB4 and Pier E-1, rolling-out span YB4

[1] Except that final quantity calculations and the structure construction sequencing plan shall be prepared by CCM and related subcontractors.

onto temporary supports, and rolling the East Tie-In into place. This "roll-out/roll-in" concept envisioned construction to be performed in stages with a short-term closure of the entire bridge.

b) Caltrans' Acceptance of the Cost Saving, Alternative ETI Design.

CCM submitted a bid to Caltrans on December 2, 2003 which included a well-defined and detailed alternative to the envisioned roll-out/roll-in scenario. CCM/IAI proposed ETI design included a rigid steel frame supported at mid-span (i.e., Bent 53) and incorporated a portion of the upper and lower deck of the existing span YB4 rather than the roll-out/roll-in scenario conceptualized in the bid documents. Notably, three out of the four bidders provided alternatives to the roll-out/roll-in scenario.

Subsequent to submitting its bid, CCM along with IAI attended the Pre-Award Meeting and discussed and answered questions relative to the alternative design for the ETI. Based on the CCM team experience, conceptual approach to the design, construction, and removal work, logistics, and schedule, and other factors as presented in the bid documents, Caltrans made a determination that CCM had provided a complete, responsible, and competitive bid for performing the work.[2] Inherently, Caltrans's evaluation also included determining that CCM's program, when implemented by the design documents provided by CCM and IAI with their bid, would cost-effectively accomplish Caltrans's design and construction goals for the TBS.

On March 11, 2004, Caltrans made a firm commitment to have the final product designed and constructed by CCM team and awarded the Prime Contract to CCM for a total cost of $78,759,650. IAI's subcontract was initially valued at $4.6 million. Of course, an integral and critical component of the cost-effective, competitively priced bid submitted

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[2] According to Section 3-1.01-A PRE-AWARD MEETING of the Special Provisions: *"Based on the bidder's experience and safety history, conceptual approach to the design, construction, and removal work, logistics, and schedule as presented in the PAIQ, the Proposal Drawings, and on any information provided at the Pre-Award Meeting, the Department will make a determination on the bidder's qualifications for performing the work in a manner that is safe for the workers and the public."*

by CCM and enjoyed by Caltrans was CCM team's ability to efficiently and cost-effectively implement their alternative for the ETI.

Importantly, Caltrans did not condition its acceptance and approval of CCM's bid and ETI alternative on the submission of a new, separate design criteria document, or, for that matter, on meeting any design criteria beyond that included in the as-bid Contract Plans, Specifications, and Special Provisions. Likewise, no provision of the contract documents contemplates or requires development of a new separate design criteria other than those provided in the Contract Plans, Specifications, and Special Provisions.

However, as the design progressed beyond the bid and the preliminary submittal state, Caltrans began to require that a new site-specific design criteria document be developed, submitted, reviewed and accepted in order for the final design to be considered and approved by Caltrans. Additionally, Caltrans directed IAI to provide certain design and boundary condition assumptions that were neither required nor consistent with IAI's design.

Caltrans' requirement for a new, site-specific design criteria document resulted in significant delays and extra work for IAI's design of the TBS structure. IAI's resources had to be redirected from the preparation of design documents to the development of Caltrans' newly required ETI design criteria. Ultimately, due to Caltrans actions the implementation of the ETI design criteria took seven revisions and over twelve months for approval.

II. DISCUSSION:

At bid, Caltrans provided conceptual design information and performance criteria for the design of the ETI portion of the TBS. Bidders were required to further develop Caltrans' concept during the proposal and selection process. Caltrans not only allowed, but encouraged potential bidders to submit alternatives to the envisioned roll-out/roll-in scenario (Bidder Inquiry #266 and #232, discussed below). Additionally, at bid time,

Caltrans believed that the existing structure met the design criteria for TBS (Bidder Inquiry #75, discussed below).

IAI did its best to cooperate with Caltrans, but as a result of the extra-contractual requirement for a separate new design criteria, and related iteration of requested information, IAI has incurred additional costs and has been significantly delayed in providing design documents in accordance with its as-bid plan. Additionally, Caltrans has directed IAI to provide certain design and boundary condition assumptions that were not consistent with IAI's design. As a result, IAI has had to abandon its approach and perform its modeling analysis in accordance with Caltrans demands which has caused significant costs and delays.

IAI is requesting an equitable adjustment of compensation to cover the extra costs, time and impacts associated with the development of the site-specific ETI design criteria and Caltrans mandates relative to certain design and boundary condition assumptions.

A. At the time of bid, mandatory development of a new separate ETI design criteria was neither contemplated nor embraced under the Contract.

According to Section 5-1.14, "Contractor Design" of Special Provisions:

> ***"The Temporary Bypass Structure shall be designed in accordance with the design criteria as shown on the plans, and as specified in these special provisions."***

As required, and as accepted by Caltrans, IAI provided a bid for the design of the Temporary Bypass Structure (TBS) based on the requirements of the Contract, in other words, in accordance with the design criteria as shown on the plans, and as specified in the special provisions. At the time of bid, mandatory development of a new separate ETI design criteria was neither contemplated nor embraced under the Contract. If a set of documents are required for submission and approval, such a requirement would be

specified in the Contract. Nowhere does the Contract state that submission and approval of a new, site-specific design criteria for the ETI is a prerequisite for the acceptance of the ETI design submittals.

In short, based on the plain language of the Contract and the Contract Plans, Specifications, and Special Provisions, IAI is not required to develop a new, site-specific design criteria for the ETI, particularly not as a prerequisite for Caltrans to consider and approve IAI's final design. IAI's efforts in this regard, based on the post-award requirements of Caltrans, and the attendant impacts suffered by IAI should be fairly compensated.

B. Caltrans did not alter any conditions or terms of the contract by requiring the submission of a new separate design criteria prior to accepting, or as a condition for accepting the bid.

For bid purposes, IAI prepared a set of complete and comprehensive preliminary design drawings and documents to demonstrate a clear plan for the design and construction of the TBS structure, including the alternative design to the ETI envisioned roll-out/roll-in scenario. The documents provided in the Contract, along with documents required to be provided in the technical portion of the proposal, determined the scope of the design and construction work for the TBS structure.

These documents were the baseline and framework within which the final design and construction costs were determined. Given the lack of a mandatory requirement to provide a new ETI design criteria, and lack of notice to provide a separate new design criteria until after the project bid and contract award, IAI reasonably could not have included the costs associated with development of new separate ETI design criteria in its bid, nor should it have been expected to do so.

On the other hand, Caltrans provided information regarding requirements for the design and construction of the TBS structure, including design and construction objectives,

constraints and criteria. Specific written inquiries regarding providing alternatives to the East Tie-In envisioned roll-out/roll-in scenario were investigated by Caltrans. Caltrans did not issue an addendum to the contract stating that a site specific design criteria shall be developed, submitted, reviewed and accepted in order for the design of the ETI to be completed.[3] Nor did Caltrans impose such a requirement as a condition of accepting CCM's bid.

CCM's bid was competitively priced and provided for the design and construction of the TBS based on the requirements under the Contract. Caltrans thoroughly analyzed CCM's proposal, and acceptance of that proposal should unequivocally demonstrate that Caltrans considered it to be an acceptable design that met all Caltrans' requirements. Again, the contract documents had no requirement for new ETI design criteria nor was the Contract ever amended to include such requirement, nor was Caltrans' acceptance conditioned on it.

However, that is exactly what Caltrans did after the award of the Contract to CCM and IAI, to detriment and cost of CCM and IAI. Caltrans improperly used its approval power to expand the scope of work for the design of the ETI by requiring the development of a new, site-specific design criteria as a prerequisite for review and acceptance of the ETI design submittals. This requirement has hindered IAI's effort to perform its design services in a timely and efficient manner.

Specifically, IAI's design of the TBS has been severely delayed and impacted by Caltrans refusal to review or approve the ETI design documents. Caltrans has established extra-contractual conditions that it required IAI to satisfy before it would review IAI's design documents for the ETI. Caltrans has refused to begin their review process until *"outstanding issues are more substantially resolved"* with the ETI design criteria[4] and

[3] Notably there were a total of 288 bidder inquiries and as a result Caltrans generated 14 addendums to alter the contract.
[4] State Letter #05.03.01-000288, dated January 24, 2005.

has asserted that the final design of the ETI will not be accepted unless a mutual design criterion is agreed upon.[5]

Clearly, CCM/IAI is entitled to an equitable adjustment of compensation as a result of Caltrans mandate to provide extra, generally undefined, work for the development of a separate new ETI design criteria after the project bid and Contract award. Additionally, IAI is entitled to additional compensation for the costs and schedule impacts to the ETI design and the other TBS design segments (specifically Viaduct) as a result of the development of a separate new ETI design criteria.

C. The requirement for a new ETI design criteria was instituted after the date of Contract award and could not have been reasonably anticipated by IAI.

Prior to bid, Caltrans advised bidders, via the bidder inquiry process, to anticipate some delays in the approval process of an alternative design for the ETI. Specifically, Caltrans' response to Bidder Inquiry #232 stated that:

> *"The specifications allow the option proposed by the Contractor. However, the State does not see how this can be accomplished in the time allowed for the bridge closure. The design for the TBS East Tie-In segment proposed by the Contractor must meet a number of criteria, including but not limited to the TBS Design Criteria, Contractor Area Use constraints shown on the C-sheets, and time allotted for bridge closures in the currently approved Traffic Management Plan (TMP). Bidders are advised that delays caused by additional approvals and other changes are at the Contractor's risk."*

IAI duly noted the response and incorporated cost and time for conducting cooperative frequent meetings to gain concurrence on design related matters as occurred between April and June of 2004.

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[5] State Letter #37, dated June 28, 2004.

However, IAI could not have anticipated at bid time that Caltrans would withhold its review process for a period of more than one year and would demand approval of a new separate site specific design criteria as condition for its review, particularly where, again, there is no such requirement found in any of the Contract Plans, Specifications, and Special Provisions.

Caltrans' deviation from what was provided in the Contract and reasonably anticipated by all parties at the time of award began innocently enough. As the design progressed beyond the bid and the preliminary submittal stage, Caltrans stated that they would need to work with the contractor to come up with performance-based criteria for the proposed ETI segment.[6] In the spirit of partnering and on the assumption that this would be an expedient, integrated, and collaborative effort, IAI provided new design criteria, which, although not required by the Contract, should have been more than satisfactory for the design of the ETI.[7]

Nevertheless, IAI's design criteria for the ETI generated substantial and subjective commentary, and individual technical interpretation from various Caltrans reviewers which were neither consistent nor integrated. To exasperate matters, during the review of the criteria, Caltrans required IAI to provide a new submittal of ETI plans before considering modifications to the criteria.[8] Ultimately, what was initially presented as a collaborative effort for the development of the ETI criteria became a mandate and IAI was told that "*Until such time that the Design Criteria is approved, review times for East Tie-In Design submittals shall not start.*"[9]

The preparation of a new separate design criteria was further exasperated by Caltrans rejection of CCM's request for a design strategy meeting with Caltrans Seismic Peer Review Committee ("SPRC"). CCM believed that in order to effectively communicate

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[6] Meeting Minutes, dated March 16, 2004 & March 26, 2004.
[7] Meeting Minutes, dated April 30, 2004.
[8] Meeting Minutes, dated May 7, 2004.
[9] State Letter #05.03.01-000237, dated December 9, 2004.

the ETI seismic design strategy it would be to the benefit of both parties to seek the assistance of the SPRC. [10] Caltrans denied the request by stating that:

> ***"As the original developer of the Temporary Bypass Structure Design Criteria, the State has the sole responsibility for the criteria and for any changes that may be made to its content. Any meeting with the SPRC are then solely between the State and the SPRC."***
>
> *State Letter No. 05.03.01-000272, dated January 10, 2005*

In short, this letter both demonstrates Caltrans' refusal to move forward cooperatively with IAI to develop the new criteria it was requiring IAI to develop while at the same time reflecting Caltrans' acknowledgment that Caltrans "has the sole responsibility for the criteria."

D. Caltrans has not been clear and consistent in their position regarding the content of the new separate design criteria

IAI is entitled to an equitable adjustment of compensation as a result of the development of the ETI design criteria due to the numerous and substantial impacts caused by Caltrans' often unclear and inconsistent approach to the issue.

Setting aside the fact that IAI did not have a contractual obligation to provide a new, site-specific design criteria document, Caltrans' often unclear and inconsistent approach to the issue is one of the main impacts to the design schedule. This is a direct cause of the unanticipated delays in the implementation of the design and the associated activities. Even after the contract award the process of implementing the design criteria has been far from settled among the Caltrans Design and Construction personnel. Caltrans has not been clear and consistent in their position regarding the content of the new design criteria.

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[10] C.C. Myers Letter 215-STL.00072, dated December 23, 2004.

Evidence of this inconsistency and lack of clarity is provided through various correspondences including the following:

In June 2004, Caltrans deemed that the preliminary design of the ETI was incomplete and asserted that:

> *"If the contractor opts to modify the existing truss, then a new East Tie-In specific criteria needs to be submitted together with the preliminary design package. At a minimum, the new criteria shall address the following:*
>
> - *Sequence of Operations*
> - *Jacking Operations*
> - *Method for controlling and monitoring deflections*
> - *Stabilization of structure during construction*
> - *Monitoring of all critical members*
> - *Contingency plans for any unanticipated events during operations, such as a jack failing, etc.*
> - *Evaluation of all existing members and connections that will be incorporated into the TBS."*
>
> *State Letter #23, dated June 4, 2004*

It is important to note that, other than the last item, all items requiring a "new design criteria" by Caltrans pertained to means and methods of construction operations, which require prescriptions regarding operations and do not relate to standards generally included in a criterion. The last item is a normal part of design and erection calculation process which is not in itself a criteria. The above items are not part of design criteria and should not have been made as a prerequisite for accepting the ETI design submittal under any circumstance.[11]

[11] Agreement was finally reached on April 22, 2005, almost a year later, that the stage construction including the load transfer analysis is part of a construction sequencing operations and is not required as a part of the East Tie-In design submittal.- IAI Letter #85, dated April 28, 2005

In spite of the above, on June 21 and June 23, 2004, in response to State Letter #23, IAI prepared a supplemental design submittal for the ETI segment along with a detailed "design criteria", and forwarded them to Caltrans for their review and approval.[12] Per Caltrans request, the criteria provided detailed narration for each stage and addressed Caltrans' stated concern of stabilizing and monitoring the existing structure through various stages.

On June 28, 2004, Caltrans accepted the Preliminary Design Submittal for East Tie-In and stated that:

> ***"The Department has accepted the above referenced submittal. However, the Final Design Submittal for the East Tie-In will not be accepted until the design criteria is mutually agreed upon."***
>
> *State Letter #37, dated June 28, 2004*

Subsequently, daily and weekly meetings were held to discuss the details of design criteria including the specifics of the ETI superstructure stabilizing and monitoring operations. On October 15, 2004, CCM team provided technical explanation on the particulars of stabilizing and monitoring the existing structure including the jacking system and personnel, load transfer and deactivation intent, transfer of loads from the existing truss to hydraulic jacks, systematic deactivation of truss members, activating permanent bearing and unloading the jacking system. [13] On November 29, 2004, IAI memorialized the discussions for the ETI design criteria and submitted for Caltrans review and approval. At the same time an informal informational submittal package for the ETI superstructure (in its final stage) including four binders of design and check calculations were submitted for Caltrans review.

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[12] "Draft Design Criteria, East Tie-In Bypass Structure", dated June 23, 2004
[13] Meeting Minutes, dated October 15, 2004.

On January 3, 2005, Caltrans acknowledged the receipt of the criteria and stated that *"At this time, this Office cannot provide approval."* Caltrans provided its comments to the design criteria via an edited version titled, "Proposed Changes to the Design Criteria No.1 thru No. 10 Sheets-For the Temporary Bypass Structure-East Tie-In".

Under Section 11.2, "Construction Staging" of this edited design criteria document, Caltrans directed CCM/IAI to provide jacking simultaneously from the South and North truss so as to prevent any racking of the system.[14]

"Construction Staging shall be modified to incorporate the following:

1) *South and North truss shall be jacked simultaneously to prevent any racking of the truss system. Both trusses shall be (sic) jacked from directly below the chord members.*
2) *Support system on north and south side shall be similar. (i.e. Provide box girder support beam and C-Bent configuration on north side to match south side.)"*

State Letter No. 05.03.01-000263, dated January 3, 2005

Accordingly, IAI had to implement additional work and take additional time to evaluate the impact on the load paths and jacking loads of the South portion of the ETI resulting from Caltrans proposed jacking also of the North truss of ETI. This additional work involved analysis of the existing YB4 for simultaneous loading for Stage 2 of construction to determine whether loading on the North Truss will require any design and detail changes to the already designed components of the ETI. Although IAI disagreed with Caltrans position regarding providing jacking from both sides, on February 22, 2005, IAI once again resubmitted the design criteria which included in part an option for jacking the South and North truss simultaneously.

[14] CCM/IAI bid was to provide jacking from the South Truss only.

On March 24, 2005, Caltrans completely stripped the revised criteria of any meaningful content and provided a four-page document which is not significantly different than the original design criteria initially provided in the contract documents. This event has clearly caused confusion as to why all the earlier requirements for the "criteria" have been imposed by Caltrans.

One of the comments provided in this stripped version of the criteria pertained to Section 10.1, "Existing YB4 As-Built Material Properties", where Caltrans had added another extra-contractual requirement. For analysis purposes, IAI had intended to use the properties of materials of existing YB4 based on what was shown in the as-built drawings. This was not acceptable to Caltrans and as such they required that the yield and ultimate capacities of the existing YB4 (steel and concrete members) be verified and substantiated by test data obtained from field or laboratory testing.

Specifically Caltrans required:

> ***"Use of these values shall be substantiated by test data resulted from field or laboratory testing of the material of the existing YB4."***

State Letter No. 05.03.01-000330, dated March 24, 2005

Once again Caltrans had contradicted itself. At bid time, Caltrans had indicated that the existing structure met the design criteria for TBS. Specifically, the question was asked:

> *"Does the temporary support structure have to meet the seismic load and criteria as for the TBS? Has the State looked into the existing structure to determine if this is technically feasible to meet this criteria?"*

Bid Inquiry #75

The answer provided was:

> *"Yes to both questions"*

Bid Inquiry #75Response

Upon notification[15] that CCM/IAI team is not under a duty to conduct an independent investigation of the adequacy of specifications, Caltrans retracted its position. Caltrans reduced the extra work scope of substantiating existing material properties by field or laboratory testing to verification of section size and property by the Contractor's Engineer.

Caltran's lack of clarity and consistency throughout attempts to develop a new ETI design criteria has been a recurring theme. This lack of clarity can be best summarized in Caltrans determination that IAI's Notice of Potential Claim #3 has no merit:

> ***"As stated in Special Provisions Section 10-1.15 "Temporary Bypass Structure", the contract plans contain sufficient design criteria for the Contractor to develop a TBS design. The envisioned roll-in roll-out concept is but one design that could have been generated using the criteria provided by the contract."***
>
> *State Letter No. 05.03.01-000190, dated November 3, 2004*

This statement begs the obvious question: If the contract plans contain sufficient design criteria for the Contractor to generate more than one design for the TBS, then why require a separate criteria, especially to be developed separately from the design itself?

E. Caltrans directed IAI to provide certain design and boundary condition assumptions that were not consistent with IAI's design.

Another adverse impact and the design schedule and cost has been Caltrans requirement regarding the boundary condition assumption and modeling interaction between Pier E1, the existing cantilever truss (E1-E-4) and the ETI. Caltrans has directed IAI to perform specific analysis techniques, including assumptions that are not consistent with IAI's design.

[15] IAI Letter # 70, dated April 4, 2005.

The Seismic Analysis portion of the design criteria states that the analysis techniques implemented in the design should be appropriate and boundary condition assumptions, mass distribution, and member representation shall be clearly documented.[16] This criteria clearly places the boundary condition assumptions within the control of the Design Engineer of the Record and not Caltrans. Caltrans has disregarded this portion of the contract and has directed IAI to provide boundary condition assumption based on Caltran's theory.

There were numerous discussions and many meetings regarding the modeling of Pier E-1, its own mass, stiffness and strength characteristics. Since Pier E-1 is responsible for the longitudinal restraint of the existing structure from Pier YB3 to Pier E-4, and the cantilever truss to the east of Pier E-1, IAI performed various analyses and investigated the potential of rocking about the base of the Pier E-1's shaft as a realistic response to seismic demands. IAI's analyses indicated that the existing Pier E-1 would rock yielding a displacement of two inches under the design evaluation earthquake (DEE) and six inches under the displacement limit state (DLS) at the top of the pier wall.

IAI's assumption regarding Pier E-1 rocking is validated by a 1992 Report titled "Seismic Retrofit Concepts for The Bay Bridge" prepared by Professor A. Astaneh-Asl, Ph.D., P.E. [17]

In this report the seismic behavior of Pier E-1 is described as:

> ***"The capacity analysis of Pier E-1 indicated that the existing Pier E-1 cannot tolerate the applied seismic loads and will rock."***
>
> *(IAI Supporting Document, Volume 1-Section A)*

[16] 4.4. Seismic Analysis-sub section 4.4.1 General

[17] Professor Astaneh-Asl, Ph.D., P.E is a professor for the Department of Civil Engineering and Earthquake Engineering Research Center at University of California at Berkeley.

Caltrans has refused to allow IAI to proceed with boundary condition assumptions of Pier E-1 as intended. Caltrans has directed IAI to proceed with the modeling interaction of Pier E1 and the existing cantilever truss (E1-E-4) with the assumption that the base of pier E1 is fully fixed (no rocking) and use a cracked section to complete member properties. [18]

There is no language in the contract or the current version of the site specific ETI design criteria, addressing the boundary conditions of Pier E-1. However, Caltrans has insisted that Pier E-1 should be modeled with the assumption that Pier E-1 does not rock. This assumption has had a significant impact on the dynamic response of ETI which has introduced additional forces on to the East Tie-In superstructure. The impacts arising out of the dynamic response of ETI has also significantly contributed to the overall delay in producing the final design of the Viaduct portion of the TBS. Specifically, IAI has had to provide analysis of and redesign the portions of the Viaduct segment where it interacts with the ETI.

By dictating the boundary condition assumptions of Pier E-1, Caltrans has acted outside the provisions of the contract. Caltrans has directed the work of IAI by requiring the design of the ETI to include boundary conditions and assumptions that were not consistent with IAI's design. Additionally, Caltrans mandate to assume such boundary conditions were neither part of the original contract nor part of the revised design criteria. As a result, IAI has had to abandon its approach and perform its modeling analysis in accordance with Caltrans demands which has caused significant costs and delays.

III. IMPACTS AND DAMAGES:

Although the DRB has not been asked to render a recommendation on the quantum at this time, it is important for the members to understand the magnitude of the impact that Caltran's action/inactions has had on IAI's design operations. Caltrans extra contractual mandates have disrupted and degraded IAI's efficient performance of the work and have

[18] IAI Letter #70, dated April 4, 2005 and State Letter SL 05 03 01-000379, dated April 18, 2005.

had a significant adverse impact on IAI's design schedule. The disruption caused by Caltrans has resulted in diminished productivity of the design groups. Specifically, in addition to the obvious impacts of the direct costs associated with meeting Caltrans' extra-contractual and inconsistent requests, these efforts have resulted in or caused the following impacts:

1. Extensive costs associated with re-design efforts due to changes mandated after design was underway.
2. Changes in one design group's work (ETI design group) has affected another design group's work (Viaduct design group),
3. Dilution of supervision due to diversion of supervisors to analyze and plan for changes.
4. Resource allocation/ Reassignment of designers. (This has adversely affected work on the TBS project as well as other IAI projects).
5. Skill dilution.
6. Extended overtime.
7. Local and cumulative disruption/Consequential impact to the overall TBS design effort.
8. Morale and attitude concerns.

IV. CONCLUSION:

Caltrans has benefited from the competitvely bid pricing of CCM/IAI team. IAI has the right to complete its design services in a timely and efficient manner in order to minimize its cost and support its competitvely bid prices. In so far as Caltrans is responsible for additional requirements and unwarranted delay that prevented IAI from efficiently perform its design services, Caltrans is responsible for IAI's resulting increased costs and subsequent impacts and delays.

IAI provided a bid for the design of the TBS based on the work contemplated and embraced under the Contract. At the time of bid, mandatory development of new ETI

design criteria was neither contemplated nor embraced under the contract. Furthermore, IAI reasonably could not have anticipated at bid time that:

a) Caltrans would refuse to review or approve IAI's design documents until IAI prepared and submitted a new site-specific design criteria for separate review and approval by Caltrans.

b) Caltrans would withhold its review process for ETI for a period of more than one year.

Caltrans requirement for a new site-specific design criteria resulted in significant delays and extra work for IAI. IAI's resources had to be redirected from the preparation of design documents to the development of the ETI design criteria. To exasperate matters, Caltrans was not clear and consistent regarding its position relative to the content of the design criteria. Ultimately, the implementation of the ETI design criteria took 7 revisions and over 12 months for approval. Ironically, the final iteration of the ETI site-specific design criteria is not significantly different than the original design criteria provided in the contract documents.

The incorporation of various Caltrans mandates (Pier E-1 Modeling) which were not necessary, but were desired by Caltrans, is clearly an inappropriate infringement upon the design schedule and budget. IAI has incurred and continues to incur significant extra costs and schedule delays stemming from the Caltran's actions/inactions.

IAI respectfully requests the DRB to make a recommendation to provide for an equitable adjustment of compensation to cover the extra costs (direct and indirect), damages, delays and impacts arising out of or resulting from Caltrans imposed mandates for a new separate East Tie-In Design criteria, unclear direction with respect to the design criteria, inconsistent boundary and design assumptions and other related actions and inactions.